R18 Regulation *Subject code:2E6DE*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech VI Semester Supplementary Examinations, April 2026

IMAGE PROCESSING AND PATTERN RECOGNITION

(ECE)

Maximum Marks: 70 Date: 21.04.2026 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X2M=20 Marks)		Marks	CO	BTL
1	List the principal application areas of digital image processing ?	2M	1	L1
2	What is image smoothing and sharpening?	2M	1	L1
3	What is Erosion?	2M	2	L1
4	List the conditions required to be met for edge linking using local processing	2M	2	L1
5	Identify the need for image compression?	2M	3	L1
6	Define compression ratio ?	2M	3	L1
7	Define eccentricity and curvature of boundary	2M	4	L1
8	How to calculate Euler number(E) for an image	2M	4	L1
9	How is the Pattern recognition problems classified?	2M	5	L1
10	List the steps involved in K-means algorithm	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	Explain the various components of an image processing system with a block diagram	10M	1	L2
	OR			
12	Assess about constrained(Wiener)and unconstrained(Inverse) restorations.	10M	1	L2
13	Explain the concept of Morphological Opening and Closing. Use the rolling ball analogy	10M	2	L2
	OR			
14	What is image segmentation. Explain in detail.	10M	2	L2
15	Explain in detail about Watermarking in the spatial and frequency domain techniques.	10M	3	L2
	OR			
16	Explain in detail about a. Statistical Compression Techniques. b. Transform based compression.	5M 5M	3	L2

17	a) Write a short note on method for finding Minimum Perimeter Polygons with an example b) Explain the role of Fourier Descriptor in Boundary Description	5M 5M	4	L2
	OR			
18	Explain in detail about Regional Descriptors.	10M	4	L2
19	a) Enumerate the Fundamental problems in Pattern Recognition system b) Explain automatic pattern recognition systems with an example	5M 5M	5	L2
	OR			
20	Write a detailed note on Bayes Classifier and Normal Classifiers.	10M	5	L2